APPENDIX C: VERTICAL BARRIER WALL DESIGN CHECKLIST

C-1. Vertical Barrier Wall Design Checklist

The purpose of this checklist is to prompt the designer or reviewer to consider all aspects of design. All major areas of design are covered by the checklist. However, the designer or reviewer must refer to the narrative and other references for detailed design criteria.

a. Predesign investigations.

(1) Field surveys and record searches.

- Have existing documents (Remedial Investigation, Feasibility Study, etc.) been reviewed? Y__N__N/A__
- Have recent and historical aerial photographs been obtained? Y__N__N/A__
- Have design or as-built drawings of the existing site conditions been obtained? Y__N__N/A__
- Has current topographic mapping of the site, preferably CADD generated with 0.3048-m (1-ft) contour intervals, been obtained? Y__N__N/A__
- Does topographic mapping identify all surface features (e.g., fences, trees, and buildings)? Y__N__N/A__
- Have existing monitoring wells, piezometers, etc. been surveyed and horizontal coordinates and vertical elevations determined? Y__N__N/A__
- Has horizontal and vertical control been established and documented? Y__N__N/A__
- Have utilities been researched, identified, located, and mapped? Y__N__N/A__
- Have boundary surveys been conducted for both the project site and impacted adjoining properties? Y__N__N/A__
- Has a property (deed) search of the site and adjoining property been performed? Y__N__N/A__
- Has access for offsite monitoring been secured? Y__N__N/A__

(2) Geological investigations.

- Have the limits of contamination been determined? Y__N__N/A__
- Has material excavatability been evaluated? Y__N__N/A__
- Have groundwater conditions been evaluated including water levels, flow directions, contaminants present and groundwater chemistry? Y__N__N/A__
- Has the depth and consistency of the aquiclude been determined along the vertical barrier wall alignment? Y__N__N/A__
- Have the subsurface geologic conditions been characterized? Y__N__N/A__

(3) Vertical barrier wall selection.

- Have various vertical barrier walls been evaluated for use? Y__N__N/A__

b. S-B slurry wall design.

(1) General.

- Do the contract documents adequately specify material and installation requirements? See guide specification CEGS-02444. Y__N__N/A__

(2) Pre-design issues.

- Have borings been taken along the proposed alignment of the slurry wall? Y__N__N/A__
- Have adequate borrow sources been identified? Y__N__N/A__
- Do the specifications require all borrow materials be tested for contamination? Y__N__N/A__

(3) Compatibility/optimization testing.

- Have several types of bentonite been obtained? Y__N__N/A__
- Has an adequate supply (40 L (10 gal) each) of groundwater and tap water been obtained for the compatibility testing? Y__N__N/A__
- Has an adequate supply (50 Kg (100 lbs)) of backfill material been collected? Y__N__N/A__
- Is the proposed testing program adequate to optimize the mix design and determine the compatibility of the backfill mixture with the contaminants present at the site? Y__N__N/A__

(4) Geotechnical design.

- Does the slurry wall alignment adequately surround the contaminated groundwater plume or hot spot? Y__N__N/A__
- Is the slurry wall alignment clearly shown on the drawings? Y__N__N/A__
- Is there an adequate aquiclude which the slurry wall will key into? Y__N__N/A__
- Is the depth of the slurry wall clearly shown on the drawings? Y__N__N/A__
- Is the wall thickness a minimum of 900 mm (36 in.)? Y__N__N/A__
- Is a work platform needed due to the slope of the ground surface (2 percent max slope)? Y__N__N/A__
- Is the work platform at least 12 m (40 ft) wide? Y__N__N/A__
- Has trench stability been considered during design? Y__N__N/A__
- Is the site layout area adequate for contractor staging, material, and equipment storage? Y__N__N/A__
- Are stockpile locations shown on the drawings? Y__N__N/A__
- Has a clay plug over the completed wall been adequately designed? Y__N__N/A__
- Have equipment crossing zones been adequately designed? Y__N__N/A__

(5) Construction quality control.

- Are Contractor qualifications outlined in the specifications? Y__N__N/A__

- Are requirements for bentonite, water, bentonite slurry, and backfill materials outlined in the specifications? Y__N__N/A__

- Are trench excavation requirements outlined in the specifications? Y__N__N/A__

- Are backfill placement requirements outlined in the specifications? Y__N__N/A__

- Are requirements for initial backfill placement described in the specifications? Y__N__N/A__

- Are quality control testing requirements described in the specifications? Y__N__N/A__

- Will post-construction testing be performed on the slurry wall? Y__N__N/A__

(6) Vegetative cover.

- Is a vegetative cover applicable at this site? Y__N__N/A__

- Are locally adapted perennial plants specified? Y__N__N/A__

(7) Instrumentation.

- Has instrumentation been specified to monitor groundwater levels or settlement of the slurry wall? Y__N__N/A__

(8) Groundwater monitoring and control.

- Is a groundwater extraction system to be utilized in conjunction with the slurry wall? Y__N__N/A__

- Have the regulatory requirements for groundwater monitoring been defined? Y__N__N/A__

- Have existing wells been evaluated for use as monitoring points? Y__N__N/A__

- Do the specifications address existing monitoring wells that will be impacted by construction (i.e., abandonment and extension)? Y__N__N/A__

- Do the contract documents adequately specify material, installation, and monitoring requirements? See guide specification CEGS-02671, "Ground-Water Monitoring Wells?" Y__N__N/A__

(9) Final grading requirements.

- Has a final grading plan been established? Y__N__N/A__

c. Civil design.

- Have site access routes been addressed in the contract documents? Y__N__N/A__

- Are staging areas identified on contract documents? Y__N__N/A__

- Have phasing requirements been addressed in the contract documents? Y__N__N/A__

- Have utility requirements been specified? Y__N__N/A__

- Are decontamination pad design, operation and disposal requirements specified? Y__N__N/A__

- Are security fence requirements addressed in the contract documents? See guide specification CEGS-02831, "Chain-Link Fence." Y__N__N/A__

- Are the limits of clearing and grubbing shown on the drawings? Y__N__N/A__

- Has disposal of cleared and grubbed material been addressed? Y__N__N/A__

- Have clearing and grubbing been addressed in the contract documents? See guide specification CEGS-02110, "Clearing and Grubbing." Y__N__N/A__

d. Health and safety.

- Have health and safety issues been addressed in the contract documents? See guide specification CEGS-01110, "Safety, Health and Emergency Response." Y__N__N/A__

e. Chemistry.

- Have chemistry requirements been adequately addressed in the contract documents? See guide specification CEGS-01450, "Contractor's Chemical Quality Control." Y__N__N/A__

f. Operation and maintenance requirements.

- Have groundwater monitoring criteria been addressed? Y__N__N/A__

- Do the contract documents adequately address monitoring and inspection issues for the vertical barrier wall? Y__N__N/A__

- Do the contract documents adequately address maintenance and repair issues for the vertical barrier wall? Y__N__N/A__